REMARKS

Claims 1-37 are pending in the present application. In the Office Action mailed November 3, 2003, the Examiner rejected claims 1-5, 7, 12, 14, 28-30, and 33 under 35 U.S.C. §103(a) as being anticipated by Wang et al. (USP 5,928,148). The Examiner objected to claims 6, 8-11, 13, 15-17, 31, 32, and 34-37 as being dependent upon a rejected base claim, but indicated that each would be allowable if rewritten in independent form. Applicant appreciates the Examiner's allowance of claims 18-27.

Applicant appreciates the Examiner's rescission of the objections to the drawings. Applicant likewise appreciates the Examiner's indication that the 35 U.S.C. §102 rejections based on Wang et al. and Yoshitome have been withdrawn.

Regarding the rejections of claims 1, 31, and 36 under 35 U.S.C. §112, Applicant respectfully refers the Examiner to the amendments set forth above. By these amendments, Applicant respectfully believes that the claims satisfy the statutory requirements of 35 U.S.C. §112.

Regarding the objection to claim 2, Applicant again refers the Examiner to the amendments set forth above. As that which is called for in claim 2 further limits the invention as defined by claim 1, Applicant believes that claim 2 is in proper dependent form and is otherwise in condition for allowance.

Regarding the objections to claims 13 and 28, Applicant believes that one skilled in the art would readily understand and ascertain that which is claimed. In short, Applicant disagrees with the Examiner and believes that there is not any grammatical informality or awkwardness that necessitates or supports the Examiner's objection.

The Examiner has rejected claims 1-5, 7, 12, 14, 28-30, and 33 under 35 U.S.C. §103(a) as being unpatentable over Wang et al. According to the Examiner:

> **"With respect to Claim 1, Wang teaches and suggests "A method of imaging large volumes without resulting slab-boundary artifacts comprising: the step of 'defining a desired FOV' (i.e. in the Wang reference the desired field of view if 32 centimeters, or 320 millimeters) [See col. 9 line 12]. The Wang reference also suggests 'an optimal imaging volume' is the volume of a subject, undergoing**

> **imaging where a strong homogeneous and uniform signal, of high resolution and diagnostic quality contrast is obtainable; (i.e. the best volume that can be imaged without degradation, aliasing, ghosting, blurring or other artifacts), and in the Wang reference the thickness of a diagnostically usable slab, (i.e. 130 to 170 millimeters thick; or 13 to 17 centimeters thick) is used for acquiring all arteries of interest [See col. 9 lines 10-12] and is a readily obvious 'optimal imaging volume', that would have been obvious to one of ordinary skill in the art, at the time that the invention was made because a slab is a planar volume, and represents the volume over which usable data (i.e. optimal) imaging is performed. Therefore the examiner is interpreting the thickness of the slabs taught by Wang to represent and suggest an 'optimal imaging volume', with the actual optimal imaging volume amount determined by the requirements of each separate application. Additionally, because 32 centimeters is larger than 13 to 17 centimeters the Wang reference does readily suggest applicant's limitation of 'defining a desired FOV larger than an optimal imaging volume of an MR scanner,'. The examiner also notes that conventionally, in a medical MR application the *ideal* desired field-of-view (i.e. the FOV) is usually larger than the optimal imaging volume because generating a large homogeneous optimal imaging volume is difficult, and most of the objects imaged, (i.e. such as human patients) are larger than the optimal imaging volume produced by the magnet(s)/coil(s) used for scanning." Office Action (November 3, 2003), ¶17, p. 7.**

Based upon the Examiner's statements, it is clear that the Examiner is considering the three overlapping FOVs disclosed by Wang et al. (Col. 5, ln. 56) as being equivalent to the claimed "optimal imaging volume". The Examiner is also considering the region-of-interest as defined by Wang et al. as being equivalent to the "desired FOV" called for in the claims. From these conclusions, the Examiner has ultimately concluded that the claimed invention is not patentable over that taught and/or suggested by Wang et al.

While Applicant believes that the Examiner has mis-applied various specific terms of art, such as field-of-view, region-of-interest, and slab; for purposes of the remainder of this response, Applicant will assume that the definitions afforded the specific terms of art in the claims are consistent with the terms which the Examiner has

considered to be equivalent in the Wang et al. reference. That is, for purposes of this response only, Applicant will consider region-of-interest to be equivalent with "desired FOV" and will consider FOV, as defined by Wang et al., to be consistent with a "slab" as claimed. As will be shown, however, assuming implementation of the Examiner's verbiage, the rejections based on Wang et al. cannot be supported.

Wang et al. teaches an MRA examination process wherein the vasculature of a patient's legs may be performed by dividing a region-of-interest (a desired FOV) into three overlapping fields-of-view (slabs). See Col. 5, lns. 54-56. Wang et al. further teaches that the overlapping fields-of-view (slabs) may be imaged by moving a patient table to three successive locations, or stations, within the bore of a magnet. Col. 5, lns. 56-59. Wang et al. further teaches that it is desirable to align the respective centers of each field-of-view (slab) with the isocenter of the MRI system. Col. 5, lns. 59-61. In this regard, Wang et al. teaches an imaging process wherein multiple fields-of-view (slabs) that collectively comprise a region-of-interest (FOV) are positioned so as to align their respective centers with the isocenter of the MRI system.

In contrast, Applicant claims a method of imaging that includes defining a desired FOV larger than an optimal imaging volume of an MR scanner and selecting a slab thickness in a first direction that is smaller than the desired FOV and within the optimal imaging volume of the MR scanner. In this regard, the slab thickness that is selected in the first direction is smaller than the desired FOV and is within the optimal imaging volume of the MR scanner. The optimal imaging volume of an MR scanner is generally defined as a limited spatial volume having optimal gradient linearity, uniform magnetic polarizing field, and uniform RF homogeneity. As such, the present invention calls for the selection of a slab thickness that is within the optimal imaging volume of the particular MR scanner.

The Examiner asserts that since Wang et al. teaches a thickness of a diagnostically usable slab that is used for acquiring all arteries of interest, the Wang et al. teaching of optimal imaging volume is readily obvious. Office Action (November 3,

2003), ¶17, p. 7. The Examiner's statement, however, is clearly erroneous and contradicts generally accepted MR principles. Moreover, the conclusions reached by the Examiner are not supported by the reference.

Wang et al. teaches the alignment of the respective centers of each FOV (slab) with the isocenter of an MRI system. Contrary to the assertions made by the Examiner, Wang et al. fails to teach or suggest that each FOV (slab) is sized in such a manner as to be within the optimal imaging volume of the MR scanner. Wang et al. teaches that the centers of each FOV (slab) is to be aligned with the isocenter of the MRI system for imaging. Such teaching is not equivalent to defining a slab thickness that is within the optimal imaging volume of an MRI system.

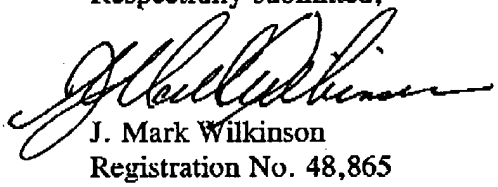
The Examiner asserts that the Wang et al. reference readily suggests Applicant's limitation of "defining a desired FOV larger than an imaging volume of an MR scanner". However, one skilled in the art will readily appreciate that it does not necessarily follow that the mere defining of a region-of-interest larger than an optimal imaging volume of a scanner requires that each slab or FOV of the region-of-interest must also be within the optimal imaging volume of the scanner. For example, it is certainly possible to define a desired region-of-interest and segment that region-of-interest into multiple FOVs or slabs wherein each FOV or slab is larger than the optimal imaging volume, as understood by one skilled in the art. In such a circumstance, it would be prudent, according to Wang et al., to align the center of each slab or FOV with the isocenter of the MRI system for improved imaging. However, as noted above, simply segmenting a region-of-interest or a desired FOV into multiple FOVs or slabs does not require that each slab or FOV have a size or thickness that is within the optimal imaging volume of the MR scanner, as suggested by the Examiner. Accordingly, Applicant believes that which is claimed is patentably distinct from that taught and/or suggested by the art of record.

Applicant appreciates the Examiner's indication that claim 18 is in condition for allowance as well as the indication that claims 6-11, 13, 15-17, 31, 32, and 34-37 are allowable.

Therefore, in light of at least the foregoing, Applicant respectfully believes that the present application is in condition for allowance. As a result, Applicant respectfully requests timely issuance of a Notice of Allowance for claims 1-37.

Applicant appreciates the Examiner's consideration of these Amendments and Remarks and cordially invites the Examiner to call the undersigned, should the Examiner consider any matters unresolved.

Respectfully submitted,



J. Mark Wilkinson
Registration No. 48,865
Direct Dial 262-376-5016
jmw@zpspatents.com

Dated: December 9, 2003
Attorney Docket No.: GEMS8081.059

P.O. ADDRESS:
Ziolkowski Patent Solutions Group, LLC
14135 North Cedarburg Road
Mequon, WI 53097-1416
262-376-5170